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Natural Sciences and Engineering Research Council of Canada

NSERC Contact

Investing in people, discovery and innovation

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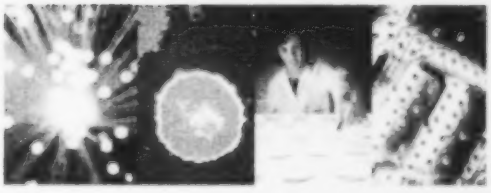

Challenges for Research Funding in the 21st Century

Editorial by NSERC President Tom Brzustowski

Early in August the Swiss National Science Foundation celebrated its 50th anniversary with a workshop on major challenges for research funding agencies at the beginning of the 21st Century. Representatives from twenty countries and the EU took part, identifying the issues and problems, and discussing ways of dealing with them. I think this was one of the most interesting meetings on research funding that I have ever attended, and I wanted to let the NSERC research community know about it.

There were four discussion themes: multidisciplinarity, high-risk research, women in science, and new forms of international co-operation. What follows are my recollections of the main points of agreement or understanding.

Interdisciplinary Research

Everyone thought that interdisciplinary research was a good thing, and to be encouraged, but it quickly became clear that it meant different things to different people. Defining inter-, multi- and trans-disciplinarity helped only a little. Eventually the discussion focussed on two areas: first, the bringing together of experts from a variety of relevant disciplines to address large and multi-faceted problems, and, second, the diffusion of concepts and methods across boundaries between disciplines. In the Canadian context, the NCE program is an example of the former; examples of the latter can be found in some of the submissions written by the disciplines for the recent Reallocations Exercise.

For the funding agencies, the first area is the easier one. Various programs were described that have succeeded in promoting collaboration among experts from various disciplines in solving complex problems. However, the general opinion was that these created only temporary alliances, with little long-term impact on the structure of science. It was the diffusion of concepts and methods between disciplines that was far more important. Many historical examples were provided of such diffusion leading to the creation of new disciplines, but they didn't reveal any recipes for success. Fiddling with program design to provide incentives was discussed at length, but no

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NSERC is Canada's instrument for promoting and supporting university research in the natural sciences and engineering, other than the health sciences.

NSERC supports both basic university research through discovery grants and project research through partnerships among universities, governments and the private sector, as well as the advanced training of highly qualified people.

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best practice was identified. There was no conclusion, but people seemed to acknowledge that the diffusion of ideas among disciplines was a well-established process in the evolution of science, and that perhaps the best thing the agencies could do was to ensure that their own practices — particularly peer review that was rigidly disciplinary — didn't get in the way. Amen.

High-Risk Research

It took a while to decide that this had to do with supporting research that was far ahead of the leading edge of established knowledge. More specifically, the risk is that of a negative result when the proposed research aims too far into the unknown. That risk is higher than in the case of advances right at the leading edge, and much higher than in research done to improve existing results or to fill gaps in existing knowledge. The greatest risk is to the researcher personally, but there is also risk to the researcher's institution and to the funding agency. Nobody questioned that such research was essential for the progress of science — indeed, it may be risky for a funding agency to support too little of it — but there was a lot of discussion about the obstacles. As might be expected, peer review came in for a lot of attention — including the argument that, strictly speaking, there could be no peer review of the science before the fact in such cases. After the work had been done, of course, peer review would be essential to decide whether the results should be accepted as real. People recognized that negative results of competent research were often valuable because they identified dead ends but, since negative results are not published, too few other researchers might be informed of them. (Negative results of incompetent research were not given much attention; peer review is supposed to take care of that.)

The discussion was long and the perspectives many. We heard examples of how some researchers "played games to beat the system" using the last grant to support some risky work in preparation for the next one. However, some very similar stories were also presented as good examples of the flexibility of certain granting agencies that enabled the best people to make big advances. The obvious conclusion eventually emerged: identify the excellent researchers through peer review of their record; if they raise a really good question and seem to have a good idea for the first steps towards the answer, give them grants that are large enough for long enough to support a serious effort to find it. And in the next grant application make them account for what they accomplished with the last grant. Except maybe for the "large enough," that is how NSERC discovery grants work.

Women in Science

I have believed it for a long time, but now I am even more convinced that NSERC's Chairs for Women in Science and Engineering, and the UFA program, are both important and unique. The uniqueness may not last — judging by their reaction to my presentation, I expect NSERC to be flattered in that most sincere way by some of the agencies represented at the workshop.

That said, the Canadian research community should know about the rising political pressure in Europe for measures to prevent bias against women in peer-reviewed competitions for research grants. Some of the proposed measures seem extreme, and if adopted they could affect Canadian scientists, at least those who act as foreign peer reviewers for European applications.

The DFG, our counterpart agency in Germany, has recently completed a thorough longtitudinal study discipline by discipline of the relative success rates of men and women applicants. This is not the first European study on this subject, but it is considered the most thorough. The DFG results show a persistent bias, with the women's success rates significantly lower than the men's in every discipline — in the range of several percentage points in success rates averaging about 30% or so. The study compares populations in the thousands, and the results are statistically

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significant. (NSERC has only overall data in this area. They show that the percentage of grants to women applicants is almost identical to the percentage of applicants who are women, strongly suggesting the same success rates for men and women. The average grant to women grantees is about 10% smaller than average, probably because there are fewer senior professors among the women grantees.)

One measure apparently being considered by governments is a law requiring all grant applications to be entirely anonymous. I leave it to the reader to contemplate the implications of that approach for the review process. Another measure which is already in place in several countries — I recall Finland as a specific example — is that *by law* both the report and the name of the referee must be made known to the applicant. In Canada, we have acts that provide for access to information and protection of privacy. The applicant is entitled to see the report, but the referee's identity is protected.

There are two compelling reasons why we must ensure that women are fully included in science and engineering research. First is the matter of individual fairness: all interested and qualified persons should have equal access to the economic benefits of careers as HQP in these fields. The second reason has to do with the needs of our society: at a time when we face a looming shortage of HQP, it would be folly not to draw on both halves of the population. The situation in Canada at first glance looks the same as in many other countries: there are few women in senior academic positions, more in junior ones, more still in Ph.D. programs, even more studying for the Master's degree, and more yet in undergraduate programs (in fact, women undergraduates are in the majority in some life science programs) — *but in Canada the proportion of women in each of these categories has been rising steadily with time*. That means that a wave of women in science and engineering is progressing through the Canadian university system, from undergraduate students to senior professors. I believe that we might come close to a steady state by the end of this decade, with many more women professors in science and engineering in all ranks. I think we can achieve this without the pressure of laws directing the peer-review system.

New Forms of International Co-operation

Some agencies take the same view as NSERC: they give their grantees full freedom to use their grants as they see fit to engage in international research co-operation, and they sign country-to-country agreements only when they are needed to enable the partners from the other side to participate. Many others, however, feel that they must exercise more detailed control. The need for pre-research funding to help set up international collaboration was mentioned repeatedly, but there seem to be very few programs like our own IOF to provide it. NSERC is doing good things to help researchers work with colleagues abroad, but we seem to have relatively little money for this area.

Three subjects raised in this discussion struck me as particularly interesting. Two agencies in the UK and Germany reached an agreement that "the money follows the researcher." UK researchers moving to Germany can take their UK grants with them, and vice versa. I don't have the details, but I think this can work only in the case of similar funding systems, similar grant levels, and similar flows of people between two countries.

We also heard a heartening story of science bringing out the very best in people. The DFG has been running a tripartite research program involving German, Israeli and Palestinian university scientists for several years. The work has been proceeding harmoniously and successfully even during the recent troubles. The DFG is paying for the research done by the Palestinian scientists. This initiative shows admirable leadership by the DFG, and it holds many lessons for the rest of us.

Let me conclude with an international issue from which we might learn something about our own needs. The subject is capacity building for research. It is clear that partnerships with universities from the North can help universities from the South build a capacity for research. But we were reminded with great eloquence by the representative from South Africa that such partnerships are very difficult. They must provide for the equality of the partners, while allowing for a great asymmetry of their capabilities. They must recognize the national complexity of the partner from the South in terms of the history, institutions, and infrastructure of that partner's nation. They must focus on research whose results will be important to the people of the nation in the South. And, finally, they must strive for excellence in the capability that is being built.

I don't recall that we heard any shining examples of North-South partnerships that met all these requirements, but it struck me that there might be useful lessons here for Canadians. Some of our small universities are looking for help in building their capacity for research, and perhaps such sensitive partnerships with established research universities might be an approach to consider.

Hot off the press...

the definitive, new biography of Gerhard Herzberg, written by his former friend and colleague Dr. Boris Stoicheff. A must read for anyone interested in the achievements of one of Canada's greatest scientists, whose name now honours NSERC's top prize. To order, go to http://researchpress.nrc.ca.

Vice-President, Members Appointed to Council

When NSERC's Council holds its fall meeting in October, there will be some new (and some returning) faces around the table, as a result of announcements by Allan Rock, Minister of Industry, and Rey Pagtakhan, Secretary of State (Science, Research & Development) during the summer.

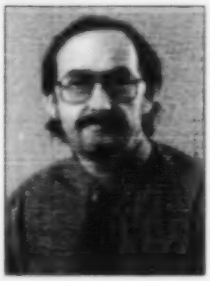
Joanne Keselman

Appointed Vice-President of NSERC (until June 2003)

- Joanne Keselman, Vice-President (Research) and professor of psychology at the University of Manitoba.

Max Blouw

Mike Lazaridis



Maurice Moloney

- Maurice Moloney, a professor in the University of Calgary's Department of Biological Sciences, and founder and Chief Scientific Officer of SemBioSys Genetics Inc.

Appointed to three-year terms:

- Claude Benoit, President and Managing Director of the Old Port of Montréal Corporation Inc.;
- Max Blouw, Vice President (Research), University of Northern British Columbia;
- Mike Lazaridis, president and co-CEO of Research In Motion Limited, inventor of BlackBerry™, and founder of the Perimeter Institute for Theoretical Physics; and

Claude Benoit

Reappointed for a three-year term:

- Suzanne Fortier, Vice-Principal, Academic, and a professor of chemistry and of computing and information science at Queen's University, and past vice-president of NSERC.

Visit www.nserc.ca/media_e.htm for biographical sketches of the new members.

$27 Million Reallocated

On July 11, NSERC President Tom Brzustowski announced that the Council will reallocate $27 million to invest in 50 initiatives and priorities proposed by the Canadian university research community.

This decision followed an extensive peer review process aimed at ensuring that the Council's funding supports the most important new developments in university research in science and engineering. Each discipline returned 10 per cent of its annual budget for Discovery Grants and identified, in a submission, its priorities for new initiatives and needs that would be important to Canada.

"The quality of the submissions was, in my opinion, the best ever, so the Committee was faced with the extremely difficult task of recommending which of the 90 proposals requesting more than $120 million should be funded from the $27 million pool," said Dr. Brzustowski.

A common theme in many successful proposals involved support for new faculty, as well as for students and other research personnel trained in university laboratories.

The submissions were particularly timely; earlier this year, the Government of Canada launched *Canada's Innovation Strategy*, a plan to address skills and innovation challenges for this decade. The submissions fit in with this strategy by highlighting Canadian strengths and areas where we can be competitive.

The details of the reallocations, as well as the full text of all the submissions and the Council's Report, are available at www.nserc.ca/programs/real2000-e.htm.

The impact of this $27 million investment will only be fully realized if individual researchers respond to the challenge of expanding their research into the priority areas selected by their community. Applicants to NSERC's Discovery Grants program should visit the above Web site to determine if any of the funded proposals are relevant to their own interests and needs. If their application fits into this context, they should clearly explain how.

Martine Dupré Named Secretary of Council

This has been a summer of change, staffwise, at NSERC, and one of those in a challenging new role is Martine Dupré, who became the Council's Corporate Secretary on July 8. Her predecessor, Isabelle Blain, was named Vice-President, Research Grants and Scholarships, in June.

Martine began working at NSERC in 1987 in the Research Partnerships Program, and has held a number of progressively more responsible positions over the years, including Chief of Co-ordination Activities in the Research Grants and Scholarships Directorate, and Manager of Review and Investigations in the Finance Division.

"NSERC is a great place to work," says Martine. "I've thoroughly enjoyed all the people I've met here and in the research community over the past 14 years, and I'm looking forward to the challenges ahead of me."

Martine Dupré

Newsbureau Working for You

As always, the NSERC Newsbureau continues to alert the media about NSERC issues and NSERC-funded researchers. Here are some examples of what we've been up to since the last time we reported to you.

Despite the traditionally quiet weeks of late July and August, the NSERC Newsbureau had a successful summer promoting researchers. On June 10, *La Presse* ran a feature on the research of McGill University's Don Smith into the "farming talents" of bacteria. Four days later, the *National Post* ran a substantial article on another McGill researcher, Manfred Rau, who is working on the problem of *schistosomiasis*. Dr. Rau uses another parasite to castrate the snail that acts as a host for the schistosome parasite. On June 17, CTV *National News* featured the University of British Columbia's Murray Hodgson, whose team is using sound to reduce the noise made by aircraft.

Stories from the *NSERC Newsbureau Bulletin* were picked up in July by the *Edmonton Journal* (the University of Alberta's Doug Dale is developing fireproof fibres) and in August by the *Winnipeg Free Press* (the Mars Simulator created by Ed Cloutis at the University of Winnipeg).

In July, CBC TV's *CountryWide* ran a story about Queen's University's Barrie Frost. He has discovered that monarch butterflies use the sun to navigate their way from Canada to Mexico. Irwin Pressman is a Carleton University maths professor who is part of a team establishing and applying "footprinting" as a forensic science. He was interviewed on August 15, on CBC TV's *Canada Now*.

In late August, Industry Minister Allan Rock visited Université Laval to launch a new research consortium that will advance e-business innovation in the forest products industry. The Newsbureau had brought lead researcher Sophie D'Amours' far-sighted program to the minister's attention. Allan Rock was impressed by the considerable benefits her program will bring to Canada's forestry industry, as well as by her successful mobilization of 14 industry and government partners. The event was attended by local media.

Carbon Cycle Research Gets a $10.5 Million Boost

In July, the Honourable Karen Redman, Parliamentary Secretary for the Minister of the Environment and Member of Parliament for Kitchener Centre, launched the new Fluxnet-Canada research network.

Under the leadership of Université Laval's Hank Margolis, the network will examine the influence of climate and disturbance on carbon cycling in forest and peatland ecosystems, thereby contributing to a better understanding of the role of these systems as sources or sinks of carbon dioxide. The work will support Canada's efforts in global climate change.

The network is an excellent example of collaboration between funding agencies. Following a joint peer review process, it went on to become jointly funded by: NSERC ($5.83 million for five years); the Canadian Foundation for Climate and Atmospheric Sciences ($3.65 million for three years); and the BIOCAP Foundation ($1 million). In addition, the Canadian Forest Service, the Meteorological Service of Canada, the Canadian Centre for Remote Sensing and several private companies have agreed to contribute to the project.

Altogether, the network will bring together over 40 research scientists from 13 universities across the country and the various partner organizations from the public and private sectors, which will create substantial training opportunities for students and postdoctoral fellows.

Fluxnet-Canada will be contributing to the larger Ameriflux effort, covering all of North and South America as well as collaborating with scientists from all over the world in similar networks such as CarboEurope, Asiaflux and Ozflux. Fluxnet has the potential to influence federal environmental policy as well as Canada's stance in global environmental negotiations.

Guidelines Revised: Engineering and the Applied Sciences

Researchers in engineering and the applied sciences are strongly encouraged to make use of the updated Guidelines for the Preparation and Review of Applications in Engineering and the Applied Sciences when preparing applications to any of NSERC's programs. The guidelines provide helpful suggestions as to the types of activities and contributions you should include in your grant proposal.

The guidelines describe the indicators of excellence and the contributions to research in engineering and the applied sciences that Committee members refer to when assessing the contributions of applicants in those fields. These indicators and contributions reflect the different nature of this type of research, and may be significantly different from those in the natural sciences.

NSERC is grateful to the members of the advisory group it tasked in spring 2001 with updating the guidelines for volunteering their time for this important activity.

Check out the revised guidelines on NSERC's Web site at www.nserc.ca/guide/p5_e.htm. If you have any questions or comments on them, contact Marie Emond at marie.emond@nserc.ca.

Moratorium on Equipment Costing More Than $150,000

As many readers will know by now, NSERC has placed a one-year moratorium on Research Tools and Instruments — Categories 2 and 3 (formerly known as Major Equipment and Major Installation) applications. Only applications for Category 1, for equipment costing $150,000 or less, will be accepted this fall. Even there, however, in the absence of new funds, the budget available may be more limited than last year.

There were several reasons for the moratorium. Over the past two years, Council's first priority has been to provide adequate funding for new applicants and this was done by the allocation of an additional $27.5 million to the Discovery Grants program. While the 7 per cent budget increase we received last year was of great assistance in dealing with the pressures from new applicants, it did not allow us to completely address our funding situation. This year, we expect a similar number of new applicants, which will again put pressure on our budget.

In light of the above and the fact that the Canada Foundation for Innovation has invested heavily in university infrastructure over the past few years and will continue to do so, NSERC decided to impose the moratorium.

NSERC is well aware of researchers' needs for Research Tools and Instruments, and will be re-examining the objectives of the Categories 2 and 3 programs in the coming year.

McGill, UQAT, Western Win National Science Writing Prizes

As reported in the last issue, the Canadian Council for the Advancement of Education (CCAE) now offers annual prizes for the best articles in university publications about research in the natural sciences and engineering.

This year's Gold Prize went to Daniel McCabe for an article in the *McGill Reporter* about biodiversity; the Silver Prize was awarded to Renée Nolet of the Université du Québec en Abitibi-Témiscamingue (UQAT) for an article in the university's magazine entitled "La Douleur a un sexe"; and the Bronze Prize went to Carmen Kinneburgh of the University of Western Ontario. Her article was about Western professor Gregory Kopp, whose research into wind turbulence is helping make buildings safer.

These "prix d'excellence" were awarded at a gala lunch June 10 during CCAE's annual meeting in Saskatoon.

Daniel McCabe says he started out life as a science-phobe. "When I graduated (from high school), I was grateful to be rid of science. I'm thankful now that I was forced to deal with it again. The sense of wonder that these researchers have about the terrain they explore is infectious. Winning the CCAE prize for research writing is one of the high points of my career so far and I'm very grateful."

Renée Nolet, who was also named CCAE's "Rising Star" at the Saskatoon conference, says UQAT is a small university located far from any major city, so she was surprised and delighted when she heard she'd won. "I think our success has as much to do with the excellent research going on at UQAT as with our efforts to write it up!"

Carmen Kinneburgh got her start as a science writer through NSERC. As an undergraduate participant in NSERC's SPARK program at the University of Calgary, she started writing up the research of the professors there and pitching the stories to local media. Some were published and that's what led to her offer of a permanent job at Western. "I like writing about the environment the most. It's so important that the general public understand about pollution and what our scientists are doing to combat it. I love being part of the process!"

There were many submissions in the Best Article on a Subject Related to University Research category, which was suggested to CCAE by NSERC. "I'm told this category was one of the most popular this year," said NSERC communications director Tim Nau. "That's understandable. Research is at the heart of the university's mission, and there's a lot of exciting activity coming out of labs these days."

Chairs Revamped

The Industrial Research Chairs (IRC) program is thriving. September seemed to underline the program's success when three new chairs were announced in the space of eight days.

And the momentum has been stepped up: NSERC's Research Partnerships Program (RPP) has introduced new measures that offer greater flexibility for the program and for those wishing to participate.

But first, the new Industrial Research Chairs: The September sample shows a diversity of research subjects and industrial partners that demonstrates how RPP is helping universities and industry build their research capacity in important areas.

The research areas include Opthalmic Toxicology (University of Waterloo); Coal Cleaning and Combustion Technology (University of Alberta); and Nuclear Materials (Queen's University). The industrial partners represent both the private and public sector: Bausch & Lomb (USA) and Bausch & Lomb (Canada); EPCOR Utilities Inc. and the Alberta Energy Research Institute; Ontario Power Generation/CANDU Owners Group and Nu-Tech Precision Metals Inc.

For more information on the work of the new chairs, go to: www.nserc.ca/media_e.htm.

The Research Partnerships Program is a dynamic program that is responding to industry's needs. The following changes have been introduced to allow it to incorporate a broader array of talents and to react positively to the research environment's fast-changing needs and opportunities.

- Associate Chairs for candidates at the Assistant Professor level, either as a free-standing chair or as part of a proposal to establish a Senior Chair.
- Executive Research Chairs will provide five-year term appointments without tenure for highly qualified candidates with non-academic research backgrounds. For example, this could include candidates from industry who are otherwise qualified as NSERC Industrial Research Chairs but who have not acquired the teaching experience or publication track record normally associated with tenured full professors.
- Renewal for a second term will now include support of the Chairholder's research program within the Chair award.
- An IRC may be renewed for subsequent five-year terms for support of the research program, subject to meeting IRC criteria and continuing support of the industrial sponsor.
- NSERC and the Canada Research Chairs Secretariat have agreed in principle to allow a candidate to hold concurrent IRC and Canada Research Chairs Program awards, subject to conditions.

The above changes are effective immediately.

Shad Valley Open House at Carleton University

What do these have in common:

- Sensors that measure the soil moisture and activate the sprinkler system so that your lawn, tomato plants and flowers are watered just when they need it;
- Interlocking pop cans that eliminate the need for extra packaging;
- A garbage can specially designed to fit in buses; and
- A trap in garbage chutes that can send compostable material into a separate collecting bin?

For one, all contribute to a cleaner environment or to a better use of our precious natural resources. But they are also the ideas of 52 enthusiastic and bright high-school students who participated in this year's Shad Valley program at Carleton University.

These students from across Canada spent four weeks in July in Ottawa, and had the opportunity to learn and to develop new skills in a collaborative, yet challenging, environment. Their main achievement was building the prototype of their idea and preparing a detailed business plan for it. The prototype and business plan were judged by a panel made up of a university professor, two bank officials and a venture capitalist.

The experience was clearly the high point of the year for the 26 male and 26 female students.

Don't be surprised if you to bump into one of them on your campus, as most plan to pursue a degree in science or engineering once they complete high school!

Shown at the University of Prince Edward Island July 4 during a meeting with successful NSERC grant applicants (from left to right): Shawn Murphy, MP for Hillsborough; Wayne Easter, MP for Malpeque; Isabelle Blain, Vice President, Research Grants and Scholarships, NSERC; Rey Pagtakhan, Secretary of State (Science, Research and Development); Wade MacLauchlan, President and Vice-Chancellor, UPEI; and Katherine Schultz, Vice President, Research and Development, UPEI.

eSubmission Goes Live!

If you're applying for an NSERC grant, you may now do so electronically. Many of you are no doubt quite familiar with the on-line application submission system by now (as *Contact* was going to print, we learned that just a few short hours after it went live September 9, 150 individuals had already accessed the site).

NSERC is grateful to members of the university community who participated in the pilot testing of the system. We sincerely hope it makes the process of preparing an application easier, for both applicants and university administrators.

But eSubmission is just one facet of NSERC's eBusiness Project, which has the goal of developing a broad range of easy-to-use electronic services to lighten the administrative load on researchers, facilitate their collaboration and communication, enhance accountability and transparency, and deliver services more effectively.

Here are some other eBusiness projects to watch for in the coming months:

- Common CV (to be pilot tested this fall by the Networks of Centres of Excellence program);
- Financial Data Submission and Reconciliation project, to enable university officials to transmit financial data electronically to NSERC (almost ready for a pilot test);
- Proof-of-concept project of an on-line collaboration environment for selection committees.

For the latest on the eBusiness Project, visit www.nserc.ca/e/index_e.htm.

At the Canadian Science Writers' Association meeting in June, Tim Nau, NSERC's Director of Communications, presented a Science in Society Award to Carolyn Abraham for her book *Possessing Genius: The Bizarre Odyssey of Einstein's Brain*.

Genomics Projects Incorporated Into Strategic Projects

Effective immediately, the Genomics Projects program has been integrated into the Strategic Project Grants (SPG) program.

The amalgamation won't mean any difference to the funding of genomics or the developing life sciences. It will mean a reduced burden on applicants and the peer review system. This was a finding that emerged from a review of program workload carried out by NSERC last year. The merger has also been endorsed by the Committee on Research Partnerships and the Committee on Research Grants. They also noted the similarity in objectives and applications between the programs as well as the advantage of running a single, more substantial competition under the SPG umbrella.

The Strategic Project Grants program, which includes genomics as a priority within the Biosciences target area, occupies a unique niche in the NSERC program spectrum. It operates between investigator-driven research supported by the Discovery Grants program and the more "client-driven" research supported by our various university-industry programs. The program allows for a broad definition of partner and requires no contribution from the partner other than active participation. Research that falls into the category of public good forms a significant part of this program. The SPG program has been successful over the years in enabling university researchers and their partners to conduct exciting projects all along the R&D spectrum.

Further details on the changes will be available on the Web shortly.

Joint Canada-European Union ICT Initiative

The Information Society Technologies Europe-Canada (IST-EC) Project is a joint initiative between Canada and the European Union that offers Canadian researchers the opportunity to network with European experts in Information and Communications Technology (ICT). The project brings together Canadian and EU research scientists and engineers, technology developers, R&D managers and industry leaders, to develop networks and foster international research collaborations that focus on **e-Learning, e-Culture and e-Content, e-Work and e-Commerce**.

IST-EC is your chance to establish a network of potential partners for research and development projects.

There are two ways IST-EC can help you:

1. Brokerage meetings centred around ICT events in Canada and Europe (e.g., conferences, trade shows, exhibitions, etc.); and
2. A virtual brokerage using a web site portal.

Be sure to register your profile and research interests on-line! It's Free! For information about the IST-EC project, upcoming events and the virtual brokerage, visit www.ist-ec.ca.

For more information on how to participate in the brokerage events, contact Abigail Forson, International Affairs Advisor, at abigail.forson@nserc.ca.